James Madison

Undergraduate Research Journal

Volume Two 2014-2015

JMURJ

The Undergraduate Research Journal of James Madison University

"Undergraduate research provides a great opportunity for students to collaborate with faculty members—and each other—in going beyond the learning of existing knowledge to the creation of new knowledge. The process of discovery and analysis in research provides one of the most powerful, high-impact learning experiences any undergraduate can have. I hope all of our students will seek to take advantage of such opportunities, which are one of the hallmarks of James Madison University."

-Jonathan Alger, President of James Madison University

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James Madison Undergraduate Research Journal
Volume Two | 2014-2015

http://jmu.edu/jmurj

Letter from the Editors

Dear Reader,

Welcome to Volume Two of the *James Madison Undergraduate Research Journal*!

With the publication of our second volume, we have discovered that a successful journal is greater than its product—it's the relationships surrounding the enterprise that make it a valuable, coherent presence in the university community. It's the common ground where students and faculty work together to support and encourage research efforts beyond the classroom and showcase the variety of undergraduate work done at JMU.

This year, we've focused on making *JMURJ* a sustainable publication.The journal has continued to develop relationships with organizations such as the JMU Office of Research and Scholarship, the Honors Program, and the JMU Libraries. *JMURJ* is now hosted on Scholarly Commons, where it has been downloaded nearly 2,000 times internationally at Volume Two's final publication date. Closer to home, we have worked with over 50 reviewers and have received submissions from all six undergraduate colleges.

This volume features four distinct disciplines: History; Biology; Writing, Rhetoric and Technical Communication; and Psychology. We are proud to present these articles as examples of the excellent scholarship produced by students at James Madison University. Going forward, our goal is to publish research from each of the six undergraduate colleges and to expand our Faculty Review Board to represent every discipline on campus.

As we begin Volume Three, we look forward to continuing our mission to promote, publish, and share diverse undergraduate research at JMU.

The *JMURJ* Editorial Board

Faculty Review Board

Acknowledgements

Thanks to the Office of Research and Scholarship for their encouragement and assistance in outreach, endorsements, and material support: Dr. Yvonne Harris, Vice Provost; Dr. Ken Newbold, Associate Vice Provost; Ms. Becky Rohlf, Fiscal Technician; and Mr. Ben Delp, Director of Research Development and Promotion. Thanks are also due to Dr. Phil Frana, Mr. Jared Diener, and Ms. Karen Allison of the JMU Honors Program for their enduring interest in the journal's success. Dr. Traci Zimmerman, Director of Writing, Rhetoric and Technical Communication, has been a longtime advocate, offering logistical and curricular support. Ms. Laura Drake Davis, Digital Collections Librarian, has helped us over the past two years to publish our work on JMU's Scholarly Commons. Thanks as well to the more than 50 JMU faculty members who reviewed *JMURJ* submissions this year. Finally, we thank President Jonathan Alger, whose insights into undergraduate research begin this volume.

Incontinentia, Licentia et Libido

The Juxtaposition of Morality and Sexuality during the Roman Republic

Robert Sharp

Sex and sexuality are important elements of human experience but are surrounded by taboos. Roman sexuality traditionally has been viewed as licentious and obscene in nature, and seemingly incongruous with the propriety expected in an honor-shame culture. But what is often considered moral, immoral, or obscene in our modern context meant something entirely different to the Romans. This paper examines Roman sex and sexuality during the Republic period (509–27 B.C.E.) and their existence alongside traditional Roman values and customs.

Sex is an important element of human existence. From the standpoint of pure reproduction and continuance of the species to the fulfillment of pleasure and personal satisfaction, sex is an essential element of human experience. The sexuality of the ancient Romans has historically been perceived as licentious in nature and focused entirely on hedonism, a belief that can be traced to early Christian polemic.[1] Modern perceptions of Roman sexuality reflect this stereotype.[2] The juxtaposition of the time-honored ideals of the Romans with their fixation on their own personal sexual gratification creates a seeming dichotomy in both thought and deed. In truth, however, Roman sexuality was complex, nuanced by context, and strongly affected by the social stratification of the Romans. It was also indicative of their honor-shame culture, as their sexuality was governed by *mos maiorum* (customs of our ancestors), placing it within the purview of traditional Roman values, as well as the Roman definition of what was moral and what was obscene.

The past three decades have seen a large amount of scholarship centered on the study of Roman sexuality and not only how it applies in their own culture, but how it compares to modern society.[3] The main focus of this scholarship, however, has been on sexuality and morality during the period of the Roman Empire, as there is a lot more primary source evidence available that explicitly details both sex and morality, and the moral position of the authors. As a consequence, expansive studies of sexuality in the Roman Republic period (509 - 27 B.C.E) are either lacking, bundled with the Roman Empire as a study of Roman sexuality in its entirety, or simply absent entirely.

Studies of sexuality in the Roman Republic period are either lacking . . . or absent entirely

The foundation for this paper was laid by Catharine Edwards' *The Politics of Immorality in Ancient Rome,* which provides a great deal of research and information on the application of morality to politics and how it affected Roman society. This is supplemented by Amy Richlin's *The Garden of Priapus: Sexuality and Aggression in Roman Humor,* which explicitly outlines Roman ideas of obscenity and immorality during the Roman Republic. Lastly, the work of John C. Clarke and his study of Roman sexual artwork in *Looking at Lovemaking: Constructions of Sexuality in Roman Art, 100 B.C. – A.D. 250* and *Roman Sex: 100 B.C. to A.D. 250* provided great insight into the Roman cultural obsession with sexuality and the standards of propriety expected of the Roman upper classes.

Unfortunately, all of these works suffer from the same issues in regard to the focus that they place upon sexuality during the Roman Empire rather than the Roman Republic. The authors, however, provide enough detail and analysis in their interpretations of Republic-era sexuality to allow an extrapolation of how the sexual attitudes of the Romans of the Late Republic/Empire were related to the societal norms and expectations of the Roman Republic period, and how they were directly connected to the system of social stratification that governed all Roman relationships and interactions.

Stratification

Rome itself was a strongly hierarchical and class-conscious society, with social class determining one's economic and political opportunities, as well as legal rights and benefits. The gulf between the upper class and the lower class in the Republic was large and quite difficult, but not impossible, to surmount. The main criterion for success was wealth. It took a substantial amount of *dives* (riches) to enable any form of social mobility, and even then, there was no guarantee of ascension. For the Romans, it was not enough to be wealthy; one had to be perceived as wealthy in order for wealth to have any social meaning or value.

A key component of Roman society, in fact the entire foundation of Roman class relations, was the patron-client system. The system, as employed by the Romans, further exacerbated the divide between upper and lower classes. Operating as a system of mutual obligations, it bound together the upper and lower social classes into a cohesive

1 Alastair J. L. Blanshard, "Roman Vice," *Sex: Vice and Love from Antiquity to Modernity* (Chichester: Wiley-Blackwell, 2010), 1-88.

2 Modern television has dedicated hours to sexualizing ancient history, with television programs such as HBO's *Rome*, or the Starz network's *Spartacus: Blood and Sand*, depicting ancient sexuality as gratuitous and trashy. Films such as *Caligula* (1979) add to the portrayals of Roman decadence commonly assumed to be the reality.

3 See, for instance, Vern L. Bullough, Brenda K. Shelton, and Sarah Slavin, *The Subordinated Sex: A History of Attitudes Toward Women*, rev. ed. (Athens: University of Georgia Press, 1988); John R. Clarke, *Looking at Lovemaking: Constructions of Sexuality in Roman Art, 100 B.C. – A.D. 250* (Berkeley: University of California Press, 1998); John R. Clarke, *Roman Sex: 100 B.C. to A.D. 250* (New York: Harry N. Abrams, 2003); Catharine Edwards, *The Politics of Immorality in Ancient Rome* (Cambridge: Cambridge University Press, 1993); Christopher A. Faraone and Laura McClure, eds., *Prostitutes and Courtesans in the Ancient World*, Wisconsin Studies in Classics (Madison, WI: University of Wisconsin Press, 2006); Thomas K. Hubbard, ed., *Homosexuality in Greece and Rome: A Sourcebook of Basic Documents*, Joan Palevsky Imprint in Classical Literature (Berkeley: University of California Press, 2003); Rebecca Langlands, *Sexual Morality in Ancient Rome* (Cambridge: Cambridge University Press, 2006); Thomas A. J. McGinn, *The Economy of Prostitution in the Roman World: A Study of Social History and the Brothel* (Ann Arbor: University of Michigan Press, 2004); Sarah B. Pomeroy, *Goddesses, Whores, Wives, and Slaves: Women in Classical Antiquity* (New York: Schocken Books, 1995); Amy Richlin, *The Garden of Priapus: Sexuality and Aggression in Roman Humor,* rev. ed. (New York: Oxford University Press, 1992); Ariadne Staples, *From Good Goddess to Vestal Virgins: Sex and Category in Roman Religion* (London: Routledge, 1998); Craig A. Williams, *Roman Homosexuality: Ideologies of Masculinity in Classical Antiquity* (Oxford: Oxford University Press, 1999); and Beert C. Verstraete and Vernon Provencal, *Same-Sex Desire and Love in Greco-Roman Antiquity and in the Classical Tradition of the West* (New York: Harrington Park Press, 2005). All of these sources focus on aspects of Roman sexuality in the context of the historical period, rather than trying to compare them to modern standards of decency.

whole that allowed Roman society to function as it did.

Patrons belonged to a higher class than clients and as a result were strategically placed to take advantage of their relationship with the lower classes. The patron was expected to provide resources to aid his client, such as employment, support in legal matters, or even invitations for meals. In return for general assistance and hospitality, the client was expected to support the patron in all ways that were required, creating a relationship built upon a foundation of entitlements and obligations. This was not always a mutually beneficial relationship, however, as the system of obligation caused strife within Roman society.

The honor-shame culture practiced by the Romans (appearances being just as important, if not more important, than actual social standing and reputation) was an indication of the prominence that was placed upon maintaining the appearance of prudence and decorum, more so than actually being prudent and decorous. Over time, complex and nuanced roles and expectations of the different social classes developed, creating a strict hierarchy that influenced all aspects of Roman society, including sex and sexuality.

With this deep hierarchy in place, it was quite easy for the upper class to exploit the lower classes in all ways. It was also extraordinarily easy for someone in another's debt to be taken advantage of sexually,[4] especially if the client was a former slave. It was perfectly legal for a patron to continue a sexual relationship with a freedman who began in servitude. While this exploitation eventually led to societal reform, the entrenchment of the patron-client system within Roman society continued to marginalize the lower classes.

The stratification of Roman society made it quite simple for Romans to gain sexual fulfillment and gratification from those of lower social standing. For male Romans, sexual dominance was gained through the act of penetration, with the passive partner immediately classified as inferior. It was expected and socially acceptable for a freeborn Roman man to want sex with both female and male partners, so long as he took the penetrative role.[5] There was no stigma at all attached to an elite adult male inserting his penis into any orifice of another, so long as that person was of inferior status.[6]

During the Republic, a Roman citizen's *libertas* (political liberty) was defined in part by the right to preserve his body from physical compulsion, including both corporal punishment and sexual abuse.[7] Roman elite males, however, who enjoyed or actively sought out being penetrated, were branded as *cinaedi* (passive homosexuals) and were forbidden to vote, nor could they represent themselves in a court of law. They were effectively outcasts from Roman society.[8] Women and slaves were automatically considered to be the inferior partner, and it was in poor form for either to administer to their own sexual gratification. Slaves were seen as nothing more than property, and as a result, their masters used them at will to fulfill whatever desires they felt entitled to.[9] The Romans viewed this treatment of social inferiors as perfectly acceptable behavior. Their actions were not only just and within their rights, but were also viewed as being completely moral within the context of their hierarchical social structure.

Morality, Immorality, and Self-Indulgence

Sociologically, morality can be viewed as determined by the society and culture in which one lives. To truly understand the impact that morality has on a society, one needs to examine notions of morality entirely within their historical and social context. To the Romans, morality was not inherent to each individual, but was instead a product of the external influences of art, ritual, literature, and music.[10]

Morality can be viewed as determined by the society and culture in which one lives

Michel Foucault writes in *The Use of Pleasure* that morality is "a set of values and rules of action that are recommended to individuals through the intermediary of various prescriptive agencies such as the family (in one of its roles), educational institutions, churches, and so forth . . . ."[11] He goes on to write that morality also refers to "the real behaviors of individuals in relation to the rules and manners that are recommended to them."[12]

As an honor-shame culture, the Romans sought to maintain the appearance of propriety at all times; as such, morality was very important and was the subject of intense scrutiny and debate. Roman *mores* (moral values) were derived from their ancestors. The *mores* of those who lived in Rome were guided, taught, and regulated in a variety of linking ways.[13] As Edwards observes, "Morality and manliness [were considered to be] the distinguishing features of Rome."[14] Discipline, obedience,

4 Liv. VIII.28.
5 Richlin, *The Garden of Priapus*, 225.
6 Clarke, *Roman Sex*, 118.
7 McGinn, *Prostitution, Sexuality, and the Law in Ancient Rome,* 326.
8 Ibid.
9 Elaine Fantham, *Roman Readings: Roman Response to Greek Literature from Plautus to Statius and Quintilian* (New York: De Gruyter, 2011), 128.
10 Langlands, *Sexual Morality in Ancient Rome*, 17.
11 Michel Foucault, *The Use of Pleasure*, vol. 2, *The History of Sexuality*, Vintage Books ed. (New York: Random House, 1990), 25.
12 Ibid.
13 Langlands, *Sexual Morality*, 17.
14 Edwards, *The Politics of Immorality in Ancient Rome*, 20.

bravery, tenacity, and frugality were all characteristics that a morally sound Roman was expected to uphold. The term *mos* (the singular form of *mores*) is often used in texts to describe "both customs and morals," with *maiorum* often affixed at the end.[15] The *mos maiorum* (customs of our ancestors) was customary in nature, but carried greater weight than even written law and was the central core of Roman traditionalism. The soundness of a Roman's actions was held up to the *mos maiorum* to be weighed and judged. The end result was a system of interlocking values that guided Roman behavior in multiple ways and determined what was and was not socially and morally acceptable in their lives.

The same standards were applied as to what could be said for the definition and context of what was considered immoral. Immorality as it is defined in a modern context has no Roman equivalent.[16] The closest comparison is actions that result in *pudor*, a sense of shame and shamefulness. There is a tendency of ancient authors, regardless of when they were writing, to bemoan the loss of traditional moral values,[17] but exactly what constituted shamefulness in Roman society is vastly different when compared to modern society. Roman morality, in essence, was concentrated almost entirely on the elite upper classes and was largely concerned with avarice and excessive self-indulgence. The Roman moralists of the late Republic found the vices of the lower classes to be uninteresting[18] and instead focused on the rampant self-indulgence of the upper classes. In fact, "the criticism of immorality was constructed by Romans themselves as a characteristically Roman activity."[19]

Immorality as it is defined in a modern context has no Roman equivalent

Self-indulgence in itself was not necessarily frowned upon by the Romans as entirely immoral. Cicero speaks in defense of his former student (and political rival) M. Caelius Rufus as to what constitutes acceptable self-indulgence based on youthful exuberance and what truly could be considered to be excessive.[20] True self-indulgence—as the excesses of M. Antonius and Cleopatra exemplified,[21] or the example of Sulla's soldiers, who were so corrupted by their stay in Asia that they roamed the land to satisfy their palates and engaged in wanton acts of debauchery[22]—was often castigated by other Romans. Sallust, in *Catiline's War,* attributes many acts of callousness and debauchery to Catiline,[23] using him to epitomize the decline of traditional Roman morality. According to Cicero, Catiline thrived in excess, and the "vices of lust raged in him."[24] Cicero leveled further criticisms against Catiline, describing him as being so depraved that his sleepless nights were the product of his sexual enormities and evil deeds.[25]

Although both Cicero and Sallust hold Catiline up as the primary example of excessive self-indulgence, it is significant to note the biases that both men have in regard to L. Sergius Catilina in the primary sources. Cicero had a personal hatred for Catiline, and used his role in stopping Catiline's alleged conspiracy to overthrow the Republic as his prime political achievement.[26] Sallust, on the other hand, was primarily focused on what he viewed to be the moral decline of Rome, and thus emphasized anything that supported this worldview. His primary source for the portrayal of Catiline in *The Conspiracy of Catiline* was how Cicero described Catiline in *On Your Consulate*,[27] and he provides no evidence for his own opinion of Catiline. However, rather than simply dismissing the criticism as the result of bias and personal dislike, it is important to note the fact that the charge of self-indulgence was leveled against someone as an attack on his character; to be accused of excessive self-indulgence was in effect a mark of an individual's importance and moral standing.

Luxury and sexual immorality are closely associated in Roman historical writing.[28] Polybius, in his *Histories*, linked excessive self-indulgence and sexuality in his attack on what he considered to be the acts of moral turpitude that were developing in Rome, with "this eruption of self-indulgence among the young men that many paid a talent for a boy bought for sexual gratification and many paid three hundred drachmas for a jar of caviar."[29] Sexual depravity, or proclivities that went against the standard practices of the period, were also ripe for invective. In Roman society, the ideal-sized phallus was small, and the wrong size was large.[30] When Roman authors wished to accuse a person of enjoying excess, they commonly charged him with liking, or preferring, large penises.[31]

The policing of morality and concern with self-indulgence and excess was of paramount importance to the Romans, so much so that they created a position to ensure proper enforcement of their *mores*, that of the *censores* (censors). The decision to devote a political position, the highest ranking position in the *cursus honorum* (course of offices), to regulating moral character reveals the high

15 Ibid., 4.
16 Ibid., 3.
17 Liv. XXXIX.6, Plb. XXXI.25, and Sal. Cat. X.
18 Edwards, *The Politics of Immorality*, 24.
19 Ibid., 2.
20 Cic. Cael. XLIV.
21 Macrob. Sat. III.17.
22 Sal. Cat. XIII.
23 Sal. Cat. XX.
24 Cic. Cael. (trans. Yonge) V.
25 Cic. Catil. II.
26 Ibid.
27 L. A. McKay, "Sallust's 'Catiline': Date and Purpose," *Phoenix* 16, no. 13 (Autumn 1962): 183.
28 Edwards, *The Politics of Immorality*, 6.
29 Plb. XXXI.25
30 Clarke, *Roman Sex*, 111.
31 Ibid., 112.

significance that the Romans placed on morality. *Censores* had the responsibility of maintaining the *mos maiorum*[32] and developed over time the power to exclude people from the official census based on their own judgment of a person's moral character. *Censores* could also impose censure on the offending party for whatever reason they decided, and entered it as such in public record as the *subscriptio censorialis* (censorial subscription).[33]

The *censores* devoted their attention to the regulation of public morals and the castigation of vices,[34] with the *regimen morem* (the keeping of public morals) being the second most important branch of a censor's duties.[35] The Romans were willingly complicit, however, in extending the authority of the *censores* beyond their initial conceit, allowing them to become the "overseer and guardian of everything that took place in the homes," even in the bedroom.[36] As much as the Romans were concerned with it, they believed that "no one should be left to his own ways and desires without being subject to inspection and review . . . ."[37]

The Roman obsession with appearances and upholding *mos maiorum* creates a seeming dichotomy between the behavior expected from those in an honor-shame culture and the general fixation on personal indulgence and fulfillment. Immorality was a foreign concept to the ancient Romans; they were concerned with maintaining the appearance of propriety rather than with denying themselves sexual gratification and the exploration of vices. Excessive self-indulgence was frowned upon as not exemplifying the true characteristics of the proper Roman. Sexual activities were regulated by the *mos maiorum* and were considered to be ordinary aspects of Roman society. Acts that were daily behaviors for the Romans could be considered unusual, immoral, or even obscene in a different cultural framework.

Obscenity

Similar to immorality, there is no true equivalent for the Romans in regard to obscenity. In a modern context, the word *obscenity* comprises "explicitly sexual literature, visual arts, dress, and actions."[38] For the Romans, the idea of obscenity was familiar, even if their definition and practical application of it differ from more modern versions. Decorum went a long way toward defining what was officially *obscenum* (obscene) and what could be counted as artistic expression. For the Romans of the Republic, true moral character was of utmost importance. It was an extension of the *mos maiorum*, to uphold the values and sheer fortitude of those who came before. The term *obscenum* itself had a strong religious connotation to it, indicating omen, and this association may have promoted the special treatment of sexual material in Latin literature.[39] Yet, despite the religious connotation, the Romans viewed morality as being more associated with politics than with religion.[40]

To the Romans, sex and sexuality were not strictly taboo subjects, but they still had certain connotations associated with them. These undertones were rooted in the concept of *decor*, as well as simple hygiene. The human genitalia, both male and female (but especially female), were perceived as being foul, a sentiment that pervaded the majority of Roman sexual humor.[41] Female genitalia are almost always described as disgusting—squashy and foul in texture and constitution, hairy or depilated, salty, and rank.[42] Roman sexuality was phallocentric,[43] and as such, the phallus could often be identified as a threatening weapon[44] or as an impotent tool,[45] often for comedic effect. In Latin, there are approximately one hundred and twenty euphemisms and metaphors for the penis.[46] In accordance with these definitions, anything related to intercourse was treated very differently than other forms of artistic expression.

Similar to immorality, there is no true equivalent for the Romans in regard to obscenity

It was this feeling and treatment—that the material was particularly special and noteworthy—that generated the convention of *apologia* (apology) in poetry and a series of strictures on decorum in prose.[47] *Apologiae* were disclaimers that defended the author, reassuring the reader that he had sound morals, regardless of how obscene the subject matter of the work at hand.[48] There was also varying importance placed on the use of language in literature versus oration; prose and poetry were more acceptable places to find sexual content, whereas an orator (public speaker) had to "choose his words carefully,"[49] often using formal language and an unwillingness to be direct in his accusations.[50]

Language was how Romans established their worth; public speaking and political office were both well respected institutions. As such, the *os* (mouth) was an integral aspect of Roman fastidiousness. The mouth, as far as the Romans were concerned, was vital to life. It was how sustenance

32 Cic. Leg. III.3.
33 Liv. XXXIX.42.
34 Liv. XXIV.18.
35 Liv. IV.8.
36 DH. XX.3.
37 Plut. Cat. Ma. (trans. Perrin) XVI.1-2.
38 Richlin, *The Garden of Priapus*, 1.
39 Ibid., 2.
40 Edwards, *The Politics of Immorality*, 31.
41 Richlin, *The Garden of Priapus*, 26.
42 Ibid.
43 Clarke, *Looking at Lovemaking*, 84.
44 Catul. LCVII.21.
45Ov. Am. III.7.
46 David J. Mattingly, *Imperialism, Power, and Identity: Experiencing the Roman Empire* (Princeton: Princeton University Press, 2011), 106.
47 Richlin, *The Garden of Priapus*, 2.
48 Ibid.
49 Ibid., 13.
50 Cic. Phil. II.44-47.

entered the body; it was how they spoke to one another (which was especially important in regards to a political career), and how they greeted each other (Romans often kissed each other in greeting). Since kissing and public bathing were common elements of Roman culture, fear of contamination of the *os* was of primary concern.[51] Combined with the common perception of genitalia as being disgusting, the strongest insult that could be leveled at a Roman was that of the *os impurum*—the unclean mouth that is the result of oral intercourse.[52]

This charge allowed for the creation of the Latin equivalent of "four-letter words," and an association of ideas of staining, wrongdoing, and ugliness with most sexual concepts.[53] These words were often said to be exciting or seductive.[54] The great *oratores* of the Republic, such as Cicero, went out of their way to avoid such language, sidestepping words or conjunctions that would produce a double meaning where none was intended.[55] The writings of Cicero provide evidence that it is the "context or location that can determine whether or not a word or activity is perceived as being obscene."[56] For instance, Cicero says it is a terrible gaffe for a man to flatulate, but in the baths it is more than acceptable to parade around entirely naked.[57] It was the context that continued to influence Roman behavior as it directly impacted the societal attitudes towards acts and actions relating to sexuality.

Catullus,[58] a renowned poet of the late Republic period, made explicit sexuality and crude invective into major components of his poetry.[59] The opening line of his poem, *Carmen* 16, *pedicabo ego vos et irrumabo* ("I will sodomize you and face-fuck you"), is evocative of the provocative intent toward its subjects, Aurelius[60] and Furius,[61] two of Catullus' contemporaries with whom he had a personal relationship. The text of the poem is Catullus' defense against his friends' charges that his poetry—and thus he—was effeminate. He refutes these charges by invoking a crude masculinity in support of his argument. The poem itself acts as an *apologia*, emphasizing that only the poet himself is required to be moral, but it is in no way necessary for his work to be so.[62]

51 Richlin, *The Garden of Priapus*, 27.
52 Ibid., 26.
53 Ibid., 2.
54 Ov. Am. III.7.
55 Cic. Fam. IX.22.
56 Richlin, *The Garden of Priapus*, 23.
57 Cic. Fam. IX.22.
58 Gaius Valerius Catullus (ca. 84 – 54 B.C.E.).
59 Richlin, *The Garden of Priapus*, 1.
60 This friend of Catullus cannot be identified with any certainty. Current historical conjecture leans towards Marcus Aurelius Cotta, elected *praetor* in 54 B.C.E.; however, this is unsubstantiated and is purely speculation.
61 Marcus Furius Bibaculus (103 BCE - ?), a first century poet who had an affair with Juventius, one of Catullus' lovers.
62 Catul. XVI.5-6.

In defending himself, however, Catullus advocates for the anal and oral rape of his friends, behaviors that would be considered entirely obscene by modern standards. This was done purely in jest, yet still indicated the retaining of one's virility, if not an increase in his portrayed masculinity. Catullus is acting as the aggressor in this poem, in which the context of the act is dependent on the traditional stratification of Roman societal roles. Forcing someone to be a receptacle for oral sex was evidence of a man's virility. A man was not compromised by his penetration of another man. In actuality, his manhood status was bolstered.[63] The Romans did not view male on male penetration as being out of the ordinary, nor was it evidence of effeminacy, so long as one was in the dominant position.

What was obscene and what was artistic expression encompassed a wide scope. The Roman concept of obscenity was based upon the idea that certain words and actions were restricted from certain situations and the association of ideas with the "staining" effect of sexual intercourse and sexuality.[64] Specific elements of human sexuality, such as genitalia, were considered to be dirty and unpleasant, granting anything dealing with them the classification of *obscenum*. Other acts, such as *pedicare* (sodomy) or *irrumare* ("face-fucking"), were entirely dependent on the context of the behavior and the perpetrators (who was passive and who was dominant) to gauge the level of obscenity or inappropriateness. These context-specific distinctions support the idea of the complex nature of Roman sexuality during the Republic period, which cannot be easily categorized as simply decadent or immoral.

What was obscene and what was artistic expression encompassed a wide scope

Conclusion

Contrary to popular modern belief, Roman sexuality during the Republic was not focused entirely on hedonism for the sake of hedonism. Instead, Roman sexuality was a variable and complex construct that cannot be easily defined as belonging simply to one category or another. Although the ancient Romans viewed sex and sexuality as fluid, with personal gratification at its core, it was still governed by the rules and requirements of the *mos maiorum*, the guiding principles of Roman tradition and morality.

The permeation in Roman society of the patron-client system and the strict hierarchy that they participated in directly influenced Roman sexuality and sexual roles. Specific acts and behaviors were automatically stigmatized depending on the status of each participant, and societal standing was at stake if these behaviors fell outside of the traditional social norms. Sexual acts performed by

63 Craig A. Williams, *Roman Homosexuality: Ideologies of Masculinity in Classical Antiquity,* 2nd ed. (New York: Oxford University Press, 2010), 181.
64 Richlin, *The Garden of Priapus*, 30.

the Romans were neither inherently moral nor immoral. It was the context that was crucial to the acceptance of specific sexual behaviors to the Romans, with male virility and masculinity dependent on pursuing the dominant role in sexual acts. Freeborn males who willingly assumed the passive role were considered to be shameful and were labeled and stigmatized accordingly.

Appearances were exceedingly important to the Romans, and it was expected that sexual behaviors and activities comply with the societal standards of the time. Anything that fell outside this range of acceptable behavior was immediately branded as being in excess, or was a source of *pudor* that could be wielded against a person, usually for political gain. Because context was also important, Roman sexuality was governed not only by the *mos maiorum*, but also by social stratification. The social stratification that was employed in administering what was acceptable and moral in regards to sexuality was rigidly defined and directly influenced Roman sexual *mores* into adhering to this stringency. Anything outside of this stern definition was categorized as being excessive, and excess led to chastisement, *pudor*, and the stigma of obscenity.

Although the Romans enjoyed the pursuit of physical pleasure and viewed sex and sexuality as a "gift from the Gods,"[65] there were strict rules and criteria that had to be followed for it to be considered acceptable and morally appropriate. These rules and criteria, when emphasized alongside the *mos maiorum* and Roman societal norms, expose as false the modern perception of Roman sexuality as being focused on hedonism and excess.

Modern standards of propriety and morality simply cannot be applied to the Romans in regard to sex and sexuality. The seeming dichotomy is only created when they are directly compared to modern societal values and attitudes towards sex and sexuality, and the definitions of morality and obscenity that we impose on them. When examined in the context of their culture and their adherence to an honor-shame society and its requirements, Roman sexual behaviors are both logical and appropriately administered.

65 Clarke, *Roman Sex*, 15.

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A Bioinformatics Approach to Revealing the Genetic Basis for Host Range Specificity

Hayley A. Norian

Bacteriophages, or phages, are viruses that infect bacteria. Mycobacteriophages are bacteriophages that specifically infect the genus Mycobacterium. *This genus of bacteria includes human pathogens such as* Mycobacterium tuberculosis, Mycobacterium leprae *and* Mycobacterium ulcerans, *which cause tuberculosis, leprosy and Buruli ulcer, respectively. The full genome sequences of 654 mycobacteriophages are currently available. Collectively, these 654 phages encode 69,581 genes. Only 20.25% of these genes have at least one known homologue in NCBI, the National Center for Biotechnology Information, leaving roughly 80% of all known mycobacteriophage genes without even a predicted function. Bacteriophages are highly host-specific and typically only infect a small number of bacterial hosts. The host range of 204 mycobacteriophages, initially isolated on* Mycobacterium smegmatis *strain* mc^2155, *was recently determined on three other bacterial hosts:* M. tuberculosis *and two* M. smegmatis *strains, Jucho and MKD8. The phages that were capable of infecting one or more of the hosts were of particular interest. The host range information was then used in an association study using Phamerator software to examine the relationship between gene products (protein phamilies) and host range of the corresponding phages. With so many uncharacterized genes encoded by these phages, the potential for elucidating key factors involved in the determination of host range is an exciting prospect.*

Introduction

The genus *Mycobacterium* includes numerous human pathogens ranging from the ancient scourge of leprosy to the world's leading infectious cause of death, tuberculosis (Huygen et al., 1996). However, a newly emerging pathogen is taking hold in sub-Saharan Africa, Central America, and Australia. This organism, *Mycobacterium ulcerans*, is the cause of a disfiguring, debilitating disease known as Buruli ulcer. The slow-growing *M. ulcerans* is the cause of the third most common mycobacterial infection in immunocompromised patients worldwide (Weir, 2002). This disease is difficult to diagnose and treat, and research aimed at improving this situation is receiving little funding or recognition. If treatment is delayed, current antibiotic treatment of the topical lesions caused by Buruli ulcer is ineffective; in most cases, the only effective means of removing the disease from the body if antibiotic treatment is not taken early is expensive and invasive surgical removal of the necrotic skin followed by skin grafting (Etuaful et al., 2005). However, an opportunity exists to combat this pathogen with another class of microbe, viruses that infect bacterial cells.

Bacteriophages are viruses that are parasitic on bacteria, and they are the most abundant biological entities on the planet. Recent estimates of their population size suggest that there are 10^{31} particles at any given time (Sabouri & Mohammadi, 2012). Furthermore, these particles are thought to collectively cause 10^{25} infections of bacterial cells per second worldwide (Lima-Mendez et al., 2007). At this time, the complete genomes of 983 bacteriophages have been sequenced and are publicly available through GenBank, the National Institute of Health genetic sequence database. Since these 983 phages represent only a small fraction of the total population, it is potentially misleading to attempt to generalize. However, a comparison of the available genome sequences shows that bacteriophages are a highly genetically diverse population.

Although phages are extremely diverse in nature, most tend to be highly host-specific. An understanding of the infection process of phages, as well as bacterial host defense mechanisms against phage infection, can explain their typically narrow host ranges. As obligate intracellular parasites, phages must penetrate the membrane of the bacterial cell and manipulate its cellular mechanisms in order to replicate and release mature virions (Rakhuba et al., 2010). In order to initiate an infection, phages must bind to specific receptors on the surface of bacteria (Goldberg et al., 1994). When binding is possible, most phages adsorb to the bacterial cell wall, although some are able to adsorb to extracellular components of the bacterium such as flagella or pili. Adsorption in many cases is mediated by tail fibers, or long projections extending from the base plate of tailed bacteriophages (Aksyuk et al., 2009). Tail fibers initiate adsorption by attaching to specific receptors on the membrane of the bacterial cell; the attachment is first reversible and eventually becomes irreversible (Rakhuba et al., 2010). If the phage lacks the unique component required to bind to the particular host cell or is otherwise unable to bind its receptor, it is incapable of infecting the cell and subsequently replicating within the host.

Following adsorption via tail fibers, a conformational change occurs. The sheath portion of the tail contracts, allowing the bacteriophage genome to penetrate the cell membrane of the bacterial host (Kostyuchenko et al., 2005). Once inside the bacterial cell, bacteriophages typically reproduce by one of two methods: the lysogenic cycle or the lytic cycle. Lysogeny involves the integration of the phage genome into the host's genome, where it remains dormant and is replicated as part of the bacterial chromosome (Wittebole et al., 2014). The integrated phage genome is then known as a prophage. Once an event such as host cell damage triggers excision of the integrated prophage, viral replication may then proceed via the lytic cycle. The lytic cycle is characterized by extensive proliferation of the bacteriophage, leading to the eventual lysis, or breakdown, of the bacterial host cell. Lytic phages manipulate the bacterial synthetic machinery to produce viral rather than bacterial nucleic acids and proteins, leading to phage assembly (Labrie et al., 2010).

Adsorption, penetration, and injection of the bacteriophage genetic material into the bacterial host cell do not guarantee productive assembly and release of the virus during a lytic infection. Many host defense mechanisms exist that allow the bacterial cell to recognize foreign genetic material and degrade it or otherwise halt the phage replication cycle, often at the cost of the infected cell. These defense mechanisms further restrict the already narrow host range of bacteriophages. Restriction-modification systems, involving restriction endonucleases, are one well-known mechanism of host defense against bacteriophages. Restriction endonucleases are enzymes that cleave DNA at or near specific recognition sequences as a defense mechanism against viruses (Loenen et al., 2014). When unmethylated phage DNA enters the host cell, a bacterial methylase can add a methyl group to it. The addition of a methyl group allows the DNA to avoid restriction modification and proceed to subsequent steps of the lytic infection life cycle, including DNA replication, transcription, translation, and phage assembly. However, in most cases, the unmethylated viral DNA is recognized by restriction enzymes of the host's restriction-modification system. These enzymes ignore the host DNA but cut the viral DNA at restriction sites, allowing it to be rapidly degraded (Labrie et al., 2010).

The specificity of phages for their target bacteria has proven extremely useful in diagnostics. Methods exploiting this specificity for bacterial identification are typically quick and cost-effective. For example, phage typing is a method used to determine the source of an infection that involves inoculating the bacteria with different phages of known host specificity in order to differentiate the particular strain causing the infection (Schofield et al., 2012). Plaques, or circular clearings in the agar, are visible when the phage successfully infects and lyses the bacterial host cells. More recently, a method

involving the detection of light produced by luciferase or fluorescent reporter phages has been used to observe infections (Rybniker et al., 2006). Specifically, a TM4 mycobacteriophage was engineered to contain a gene encoding enhanced green fluorescent protein (EGFP) in order to detect drug-resistant strains of *Mycobacterium tuberculosis* (Rondon et al., 2011). This method is both a rapid and an economical means of detecting drug-resistant tuberculosis and may be clinically useful.

As public health concerns over antibiotic resistance in pathogenic organisms escalate, a need for novel mechanisms of treating bacterial infection arises. The specificity of phages to their hosts, among other factors, makes them potentially useful as therapeutic agents to combat bacterial infection. Using phages to treat pathogenic bacterial infections is termed phage therapy. While the ultimate lysis of the bacterial cell is common between both phage infections and antibiotics, the mechanism by which it occurs differs. Some antibiotics, including β-lactam antibiotics such as penicillins, cause bacterial cell death by inhibiting cell wall peptidoglycan synthesis (Holten & Onusko, 2000). As the structural integrity of the cell wall is lost, the bacterial cell becomes susceptible to osmotic pressure and eventually lyses. Phages, on the other hand, bind and infect a particular host, utilize the machinery of that host cell to replicate, and eventually lyse bacteria from within the cell with the help of enzymes such as lysozyme, holin, and hydrolase (Young, 1992). Lysis serves to release the replicated phages and is therefore essential to the spread of viral infections.

Exposing bacteria to antibiotics naturally selects for organisms containing antibiotic resistance genes. While the extent of diversity among the bacteriophage population has yet to be determined, it is evident that phages are much more diverse than the very limited number of antibiotics currently in use (Wittebole et al., 2014). Although using phage therapy would inevitably result in some resistance, considering the diversity and number of phages in existence, it is almost a non-issue. Phages are also much more specific for their host than antibiotics, which can act on a much broader spectrum (Kutateladze & Adamia, 2010). Since phages can only infect particular hosts, the likelihood that the normal flora within the body will be affected is greatly reduced. Leaving the human microbiota undisturbed can potentially reduce the risk of opportunistic infection during treatment (Wittebole et al., 2014). The use of phages as therapeutic agents to treat pathogenic bacterial infections in humans has not been approved in the United States. However, phages are currently being used in the United States as a means of controlling growth of bacterial pathogens and spoilage organisms in food and the food-processing environment (Brovko et al., 2012). While phage therapy lost favor in the United States after antibiotics were introduced, phage therapy is still commonly practiced in Georgia and other parts of Eastern Europe (Wittebole et al., 2014).

The diverse population of bacteriophages may be organized by the bacteria that they infect. Mycobacteriophages, viruses that infect the genus *Mycobacterium*, are of particular interest. The complete genome sequences of 654 mycobacteriophages have been determined. Comparative genomic analysis at both the nucleotide and gene content levels shows that while all 654 mycobacteriophages infect *Mycobacterium smegmatis* strain mc^{2}155, the host on which they were isolated, they represent a diverse population as a whole. These phages have been grouped into 62 distinct groups, termed clusters, subclusters, and singletons, based on average nucleotide identity and protein phamily composition. Protein phamilies (phams) are groups of amino acid sequences sharing considerable sequence homology. Clusters are closely related genomes based on these parameters, while subclusters represent genomes within the same cluster that may be further divided based on differences in degrees of nucleotide similarity between members of the same cluster. Singletons are single genomes with little to no sequence similarity with any another sequenced genome at this time. These classifications vary dramatically in size: singletons, the smallest of these distinct groups, are each the only representative of their genome architecture. Meanwhile, there are 72 subcluster A1 genomes representing that architecture. However, it is important to note that there is likely some sampling bias as the mycobacteriophages represented here have been collected over a number of years, from a relatively small number of sites, and mostly in early fall. Therefore, the current distribution probably does not accurately depict the actual diversity of the population at any given time.

Clusters and subclusters are determined by Phamerator, a bioinformatic tool capable of both comparative genome analysis and representation of bacteriophage genomes. Phamerator organizes genomes and proteins into related groups based on nucleotide and amino acid identity. In order to sort proteins into phamilies (phams) of related amino acid sequences, Phamerator performs pairwise amino acid sequence comparisons between predicted protein products of a set of phage genomes (Cresawn et al., 2011). These phams are organized in such a way as to allow the relationships between different phages to be analyzed using genome maps, which, in turn, illustrate the mosaic nature and potentially the evolutionary history of phage genomes.

While all of the sequenced mycobacteriophages infect *M. smegmatis* strain mc^{2}155, a subset also infects other related mycobacterial hosts. These include human pathogens such as *Mycobacterium leprae*, *M. tuberculosis*, and *M. ulcerans*. The host range of 204 mycobacteriophages, initially isolated on *Mycobacterium smegmatis* strain mc^{2}155, was recently determined on *M. tuberculosis* strain mc^{2}7000 and *M. smegmatis* strains Jucho and MKD8 (Jacobs-Sera et al., 2012). The quantification of host range phenotypes was described as an efficiency of plating relative to mc^{2}155. Plating efficiency is a measure of the number of plaques formed on one host relative to another host. Phages with an efficiency of plating of one for a particular host have the same titer, or concentration of virus, on that host as they have on mc^{2}155. Those with an efficiency of plating of zero for a particular host do not detectably infect that

host. Efficiency values between zero and one can indicate either a reduced replication rate or the emergence of viral mutants that can infect a host that is typically non-permissive for that virus. All three types of efficiency were observed, and efficiencies generally correlated with the phage genome clusters.

Two large sets of data existed without any efficient means of correlating the information contained within them: mycobacteriophage genome sequence data and mycobacteriophage host range data. While 654 mycobacteriophages genomes are currently sequenced and the efficiencies of plating of over 204 mycobacteriophages were determined on three hosts, there was no obvious way to draw conclusions or inferences about the relationship between genome composition and host specificity. The majority of bacteriophage genomes consist of genes of unknown function with no known homologues. The few exceptions seem to be comprised of highly conserved structural genes. Of the 69,581 genes encoded by the sequenced mycobacteriophages, only 20.25% have one or more homologues in NCBI, the National Center for Biotechnology Information. This leaves roughly 80% of all sequenced mycobacteriophage genes without even a predicted function. With so many uncharacterized genes encoded by phages, a computational approach was taken by performing an association study to identify individual mycobacteriophage genes or combinations of genes that are linked to host susceptibility or resistance to each phage.

Methods

Phamerator, the bioinformatic software program used for comparative genomic analysis and representation of phage genomes, is written entirely in Python computer programming language. This software organizes related gene products into phamilies based on amino acid sequence similarity using both BLASTP (The Basic Local Alignment Search Tool for proteins) and CLUSTALW (an alignment program that performs multiple protein sequence alignments) to perform pairwise amino acid sequence comparisons. A CLUSTALW threshold of 32.5% identity and a BLASTP e-value cut off of 10^{-50} served as optimal parameters for building phamilies. These values allowed phamilies of homologous proteins to be built of only closely related domains within the proteins themselves without false pham assembly. Phamerator also performs automated searches of GenBank and NCBI to indicate previously identified proteins and conserved domains.

A host range database was established using the current database of bacteriophage genome data within the program Phamerator. Phamerator utilizes MySQL database software to populate phage and gene tables with information in GenBank records. In addition to these tables, another table containing the bacterial hosts used in the host range study was created. A second table comprised of the plating efficiencies of 204 phages on the different bacterial hosts relative to their infection of *M. smegmatis* strain mc^{2}155 was generated. A genome-wide association study (GWAS) concerning host range was performed. Software was written to find conserved protein phamilies existing in any phage that infect a particular host to determine whether or not these conserved proteins correlate with the ability of the phages to infect the host in question. The information from the GWAS was then depicted on the genomic maps generated within the program by selecting the "show host range data" option from the pull-down menu, at which point the program colored the conserved protein phamilies on the genomic maps according to the host(s) that the phage containing the conserved proteins could infect.

Results

After the host range data was added to the MySQL table, a GWAS was performed to determine the number of conserved and non-conserved protein phamilies that existed between mycobacteriophages with an efficiency of plating on *M. tuberculosis* strain mc^{2}7000 and *M. smegmatis* strains Jucho and MKD8 within one order of magnitude of *M. smegmatis* strain mc^{2}155. A Venn diagram depicts the distribution of these phamilies among phages that could infect one or more of the hosts (Figure 1). Somewhat surprisingly, the mycobacteriophages that were capable of infecting *M. smegmatis* strain Jucho were the most distinct; 55% of the protein phamilies found in phages that infect Jucho are not found in phages that infect MKD8 or *M. tuberculosis*. Meanwhile, 21.4% and 0.6% of protein phamilies found in phages infecting MKD8 and *M. tuberculosis* respectively are unique to those groups. This occurrence may be partially explained by the number of mycobacteriophages observed to infect each host: 14 phages infected *M. tuberculosis,* 23 infected MKD8, and 99 infected Jucho. Of these mycobacteriophages capable of successful infection, one was observed to infect both *M. tuberculosis* and MKD8, nine were observed to infect both Jucho and MKD8, 11 were observed to infect both *M. tuberculosis* and Jucho, and one phage was capable of infecting all three hosts. A total of 88 phages were incapable of infecting any of the three hosts other than *M. smegmatis* strain mc^{2}155, the host on which they were originally isolated.

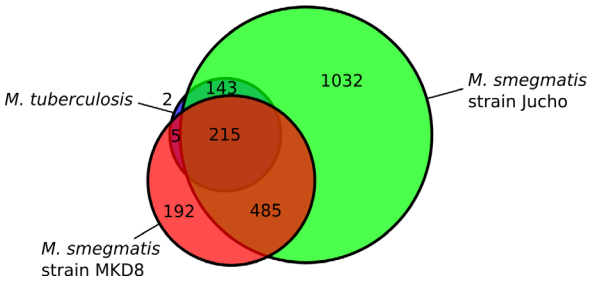

Fig. 1: The number of protein phamilies in phages infecting each of three hosts is shown as a Venn diagram. Two phamilies are found only in genomes that infect the human pathogen M. tuberculosis.

The considerably higher rate at which the tested mycobacteriophages were able to infect Jucho compared to MKD8 and *M. tuberculosis* may be a result of significant diversity within the host Mycobacterium species that were utilized. While a sequenced genome is currently unavailable for *M. smegmatis* strain Jucho, *M. smegmatis* strain MKD8 has been sequenced

and studied. MKD8 appears to be structurally different from *M. smegmatis* mc²155: it lacks a 55.2kb genome duplication present in mc²155 and roughly 1.6% of the genome consists of single-nucleotide polymorphisms, or SNPs (Gray et al., 2013). A total of 649 insertions and deletions greater than 19 basepairs (bp) in length were also observed. Subsets of these insertions and deletions as well as the SNPs present in the genome may be responsible for the phenotypic differences observed within these strains of *M. smegmatis.* Upon analysis of the genome sequences of those 204 phages included in the host range study, pham 982 was identified as a protein phamily of particular interest (Figure 2). Pham 982 is conserved in only five of the 654 mycobacteriophages genomes that have been sequenced to date, and each of the phages containing this protein phamily belong to subcluster A2. Only two of the five phages have had their host range on *M. tuberculosis*, Jucho, and MKD8 tested, but both phages are able to successfully infect Jucho and *M. tuberculosis* (Jacobs-Sera et al., 2012). These two phages, D29 and L5, represent two of the three total A2 phages known to infect *M. tuberculosis*. The third phage, Turbido, lacks pham 982. From this initial analysis, it seems that pham 982 may correlate with the ability of phages L5 and D29 to infect *M. tuberculosis.* HHpred analysis returned a restriction endonuclease as the closest match to the amino acid sequence of pham 982, but with an e-value of 6.6, it remains unclear what the exact function of this protein is. HHpred is a tool used for homology detection and structure prediction.

A recently sequenced and annotated mycobacteriophage, Rover14, shares considerable sequence homology with the Cluster G phage Angel. Angel has been observed to infect both Jucho and *M. tuberculosis* at efficiencies of plating comparable to mc²155 and is the only Cluster G phage known to infect *M. tuberculosis*. Of the three hosts that were tested, the closely related Cluster G phage Halo was only observed to infect Jucho, forming plaques at an efficiency of plating of 1.7 relative to mc²155. When Halo was plated on *M. tuberculosis*, it formed plaques at an efficiency 6.0×10^{-4} lower than on mc²155. However, if plaques were picked from these *M. tuberculosis* plates, harvested and subsequently plated onto mc²155 and *M. tuberculosis*, equivalent titers were observed on both mc²155 and *M. tuberculosis*. The entire genome of the Halo expanded host range mutant was sequenced, and a single non-silent mutation in putative minor tail protein gene product (gp) 22 was identified. This mutation substitutes an alanine residue at position 604 with a glutamic acid residue (Jacobs-Sera et al., 2012).

Angel, which infects *M. tuberculosis* at high efficiency, has an alanine at position 604, suggesting that the glutamic acid residue at this position is not an absolute requirement for infecting *M. tuberculosis* (Figure 3). Interestingly, the homologous gene in Rover14 contains a glutamic acid residue at position 604, just as the mutant Halo phage with enhanced host range does. This observation suggests that like the Halo mutant, Rover14 will infect *M. tuberculosis* at high efficiency.

Utilizing the view by host range data function in Phamerator, comparisons of protein phamily composition between phages belonging to the same cluster or subcluster may be advanced. Upon generation of a genomic map of subcluster A2

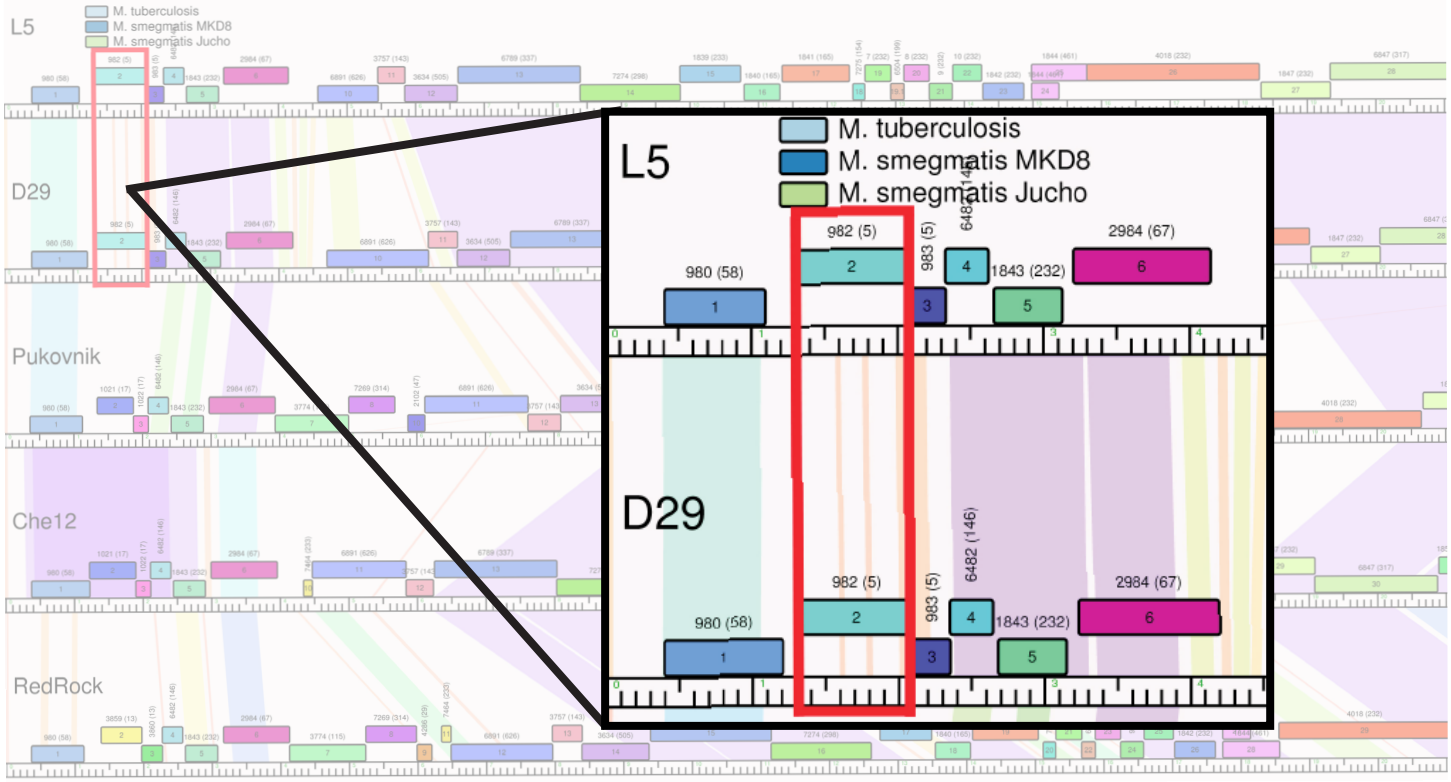

Fig. 2: Genomic map representation of subcluster A2 mycobacteriophages whose efficiencies of plating on M. tuberculosis*, Jucho, and MKD8 were tested in the host range study. Pham 982 (boxed in red) is conserved in only 5 phages, including L5 and D29. Both L5 and D29 infect Jucho and* M. tuberculosis*. Phages Pukovnik, Che12, and RedRock lack Pham 982.*

```
Halo_gp22       PFNAFSITSDSARTFTVSINGTAFDSYTDTAASSSMGANFRNGGWGSSDHNVPGSISQFA  660
Rover14_gp22    PFNEFSITSDSARTFTVSINGTAFDSYTDTAASSSMGANFRNGGWGSSDHNVPGSISQFA  660
Angel_gp22      PFNAFSITSDSARTFTVSINGTAFDSYTDTAASSSMGANFRNGGWGSSDHNVPGSISQFA  660
                ***********************************************************
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Fig. 3: Clustal Omega amino acid alignment of gene product 22 in cluster G mycobacteriophages Rover14, Angel, and wild-type Halo. While much of the amino acid sequence is conserved between these three gene products, Rover14 contains a glutamic acid residue at position 604, while Angel and wild-type Halo contain an alanine residue (highlighted in red).

mycobacteriophages, an interesting variation in these phages with high nucleotide similarity is observed. While many of the subcluster A2 phages contain the pham 7269, there seem to be two distinct locations at which this protein phamily is found (Figure 4).

Certain mycobacteriophages, such as Trixie, EagleEye, Pukovnik, and RedRock, encode this gene product close to the left end of the genome. Other mycobacteriophages, like Odin, L5, Che12, and D29 encode pham 7269 toward the center of their genomes. Turbido is the only subcluster A2 mycobacteriophage on this map lacking this protein pham. This phage is also the only tested subcluster A2 mycobacteriophage found not to infect the bacterial host Jucho at an efficiency of plating within one order of magnitude of mc^{2}155.

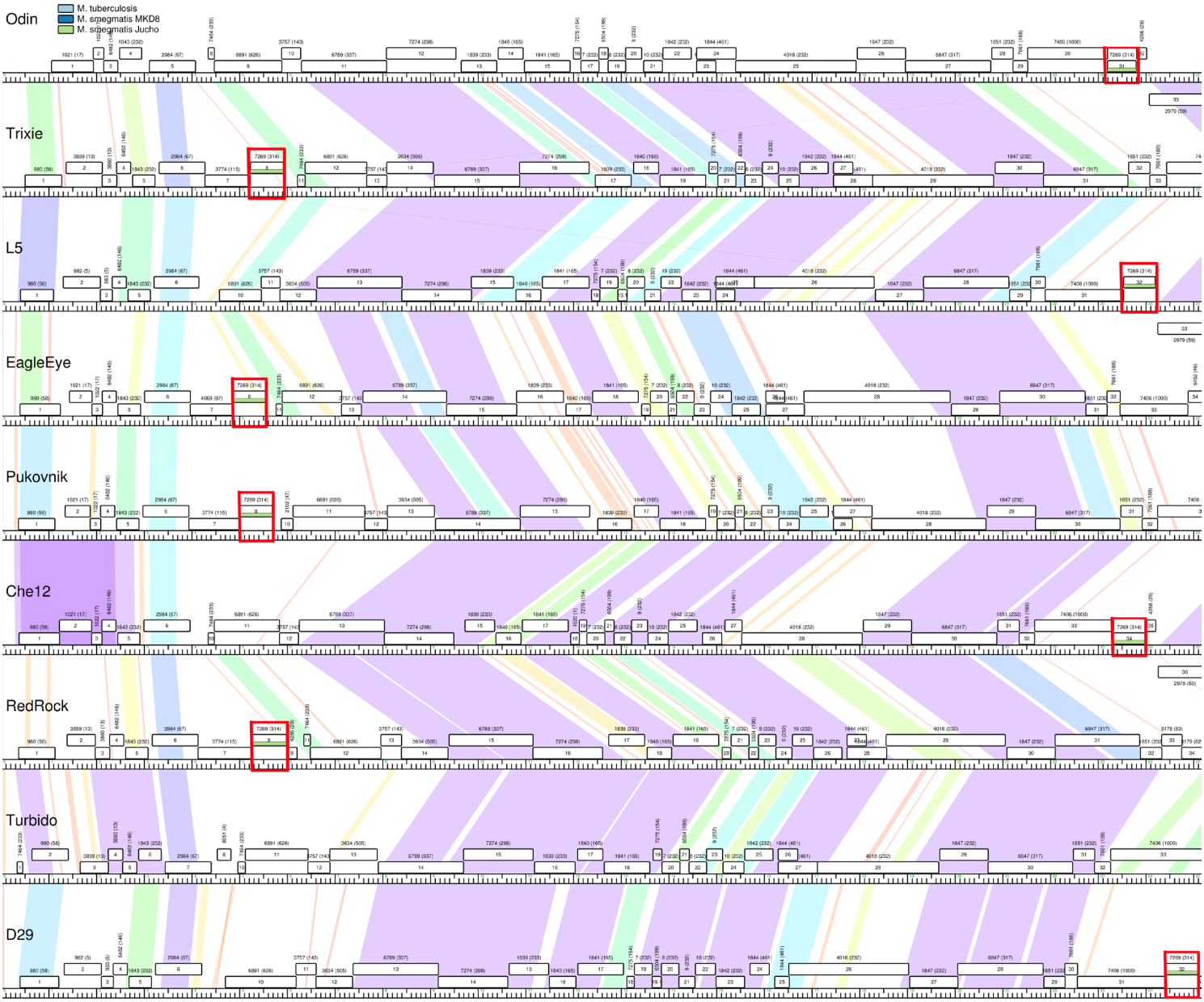

Fig. 4: Genomic map representation of subcluster A2 mycobacteriophages. Pham 7269 (boxed in red) is conserved in eight of the nine phages represented here, with some phages coding for this protein phamily toward the left end of the genome and others toward the middle.

In Figure 4, each instance of pham 7269 is color-coded in green to represent its conservation in phages within the same cluster or subcluster capable of infecting Jucho and lack of conservation in those phages that were not found to infect this host. It is unclear what effect, if any, the positioning of this gene may have on its function, but it is interesting to note that of the four mycobacteriophages with pham 7269 located towards the middle of their genomes, two of these phages are capable of infecting *M. tuberculosis*.

Within this same subcluster, it seems significant that only two of the nine mycobacteriophages representing subcluster A2 here contain pham 3838: Trixie and Turbido. Of the 204 mycobacteriophages tested in the host range study on hosts *M. tuberculosis*, MKD8, and Jucho, Trixie and Turbido were the only two phages belonging to subcluster A2 determined to infect *M. smegmatis* strain MKD8.

The host range data is displayed on the genome maps of these bacteriophages, highlighting the conservation of pham 3838 in subcluster A2 phages capable of infecting MKD8 and non-conservation in those incapable of infection (Figure 5). This phamily is represented in only 18 mycobacteriophage genomes to date.

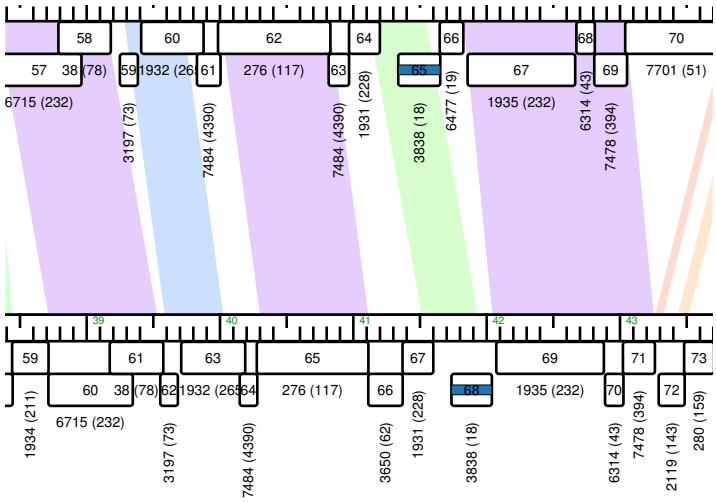

Fig. 5: Subcluster A2 mycobacteriophages Trixie (top) and Turbido (bottom) are the only two tested mycobacteriophages known to infect M. smegmatis *strain MKD8. These two mycobacteriophages both contain pham 3838 while the other A2 phages represented lack it. Pham 3838 is color-coded dark blue.*

Of the three subcluster L1 mycobacteriophages tested in the host range study, only two were capable of infecting *M. smegmatis* strain MKD8 at a plating efficiency comparable to mc^{2}155. When analyzing the genomes of these three mycobacteriophages, JoeDirt, LeBron, and UPIE, pham 3747 was of particular interest (Figure 6). While the phages capable of infecting MKD8, JoeDirt and LeBron, both contain this phamily, this gene product is deleted in the otherwise closely related genome of UPIE, the phage incapable of infecting MKD8.

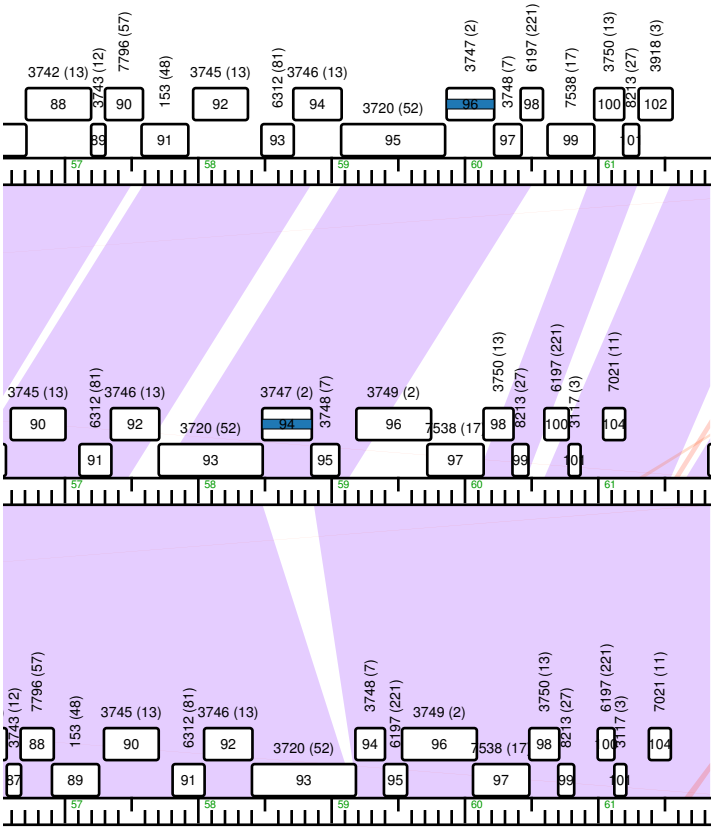

Fig. 6: JoeDirt, LeBron and UPIE represent the three subcluster L1 mycobacteriophages whose host range on M. tuberculosis *and* M. smegmatis *strains MKD8 and Jucho has been tested. Both JoeDirt (top) and LeBron (middle) are capable of infecting MKD8, while UPIE (bottom) lacks this capability. Pham 3747, colored dark blue, is only known to exist in subcluster L1 mycobacteriophages JoeDirt and LeBron.*

JoeDirt and LeBron, the only subcluster L1 mycobacteriophages known to infect MKD8, are also the only two sequenced mycobacteriophages that contain pham 3747. The role of this protein phamily should be investigated further to determine if it plays a role in the specificity of these phages for this host.

Discussion

A number of factors can influence the susceptibility of a given bacterial strain to infection with a particular phage. One well-characterized example is restriction endonucleases, which can degrade the genomic DNA of phages upon its injection into the cell. It is likely that still other systems exist to protect bacterial cells from infection, and that pathways that circumvent these systems remain undiscovered in phage genomes. Thus, it is critical to explore the correlation of protein phamilies in the sequenced mycobacteriophages with the host range of those phages.

All currently sequenced and annotated mycobacteriophages are members of the order Caudovirales. As such, mycobacteriophages share structural similarity in the form of a flexible tail and dsDNA genome contained within an icosahedral

head. Despite their structural similarity, much diversity exists between these phages (Fokine & Rossmann, 2014). The mosaic genomic organization of these phages, as well as the potential evolutionary history, may be observed utilizing Phamerator. Previously, an efficient means of displaying host range data simultaneously with genomic structure did not exist. This software combines host range data compiled in the laboratory with genome arrangement data to search for correlations between the two. Color-coding the conserved protein phamilies in related phages that are capable of infecting a particular host allows for the investigation of the potential role of those proteins in phage infection and host specificity. Considering the relatively high percentage of mycobacteriophage gene products with no known function, potential elucidation of key factors involved in host range determination is an exciting prospect.

A better understanding of this large and diverse population has real world implications. Although bacteriophages may not currently be an integral part of medical care for humans, they have already been implemented in several other fields. Phages are utilized as disinfectants in meat packaging plants and have even been introduced into veterinary medicine (Brovko et al., 2012). Mycobacteriophages in particular provide opportunities for advancement and acceleration of diagnostics for the typically slow-growing genus of bacteria that they infect. Diagnosis of mycobacterial infections and determination of antibiotic-resistant strains of pathogenic bacteria is greatly expedited using mycobacteriophages tagged with EGFP (Rondon et al., 2011). A more thorough understanding of the molecular basis for host range will contribute to the utility of phages as therapeutic and diagnostic tools.

Acknowledgements

I would like to thank my thesis advisor, Dr. Steven G. Cresawn, for his contributions. I would also like to thank Deborah Jacobs-Sera, Dr. Graham F. Hatfull and the Howard Hughes Medical Institute SEA-PHAGES Program. This work was supported by NIH grants 5R24GM093901 and R15AI082527.

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Animating Gender Roles:
How Disney is Redefining the Modern Princess

Juliana Garabedian

A prominent voice in the entertainment industry, Disney impacts many facets of society, including how we define gender roles. For the past 80 years, America's younger generations have taken social cues from their favorite animated movies, learning to act like their favorite princes and princesses. Over the past few decades, Disney has broken through the concept of the damsel in distress and transitioned to represent and even advance modern feminist ideals. From likable protagonists to prominent images and popular products, the movies reinforce the gender roles they present because children learn to imitate the characters during playtime.

The idea of being a princess is not a novel fantasy; it has been around for centuries. The difference now is that becoming a princess is as easy as purchasing a tiara and hosting a princess-themed birthday party or buying a Halloween costume and playing pretend. Disney, one of the most recognizable names in the entertainment business, capitalizes on this desire to be royal and markets the Disney brand as the true American lifestyle through popular product lines such as Disney Princess. In *Mouse Morality: The Rhetoric of Disney Animated Film*, Annalee R. Ward writes that "generations are now raised on Disney fairy tales, and original story lines are forgotten or dismissed as not the real thing. Disney rewrites the original tales for its particular version of American values" (2). For years now, America's younger generations have been taught to think and act according to their favorite princesses and/or princes, ultimately learning social cues as they imitate their favorite animated movies.

Between 1937 and May 2014 Disney released 684 theatrical features, 11 of which are labeled as part of the Disney Princess line. *Frozen*'s Anna is in the process of being recognized as an official princess (Smith). This paper, divides the princesses into three categories with regard to how their movies display gender roles: Pre-Transition, Transition, and Progression. These three waves parallel the feminist movement, showing how Disney has progressed during the past five years from accepting social cues for gender norms to redefining them.

Once Upon a Time

The Pre-Transition category covers the years from 1937 to 1959, a period Charlotte Krolokke, an assistant professor of the Center for Cultural Studies at the University of Southern Denmark, defines as a part of the "first wave of feminism" (7). Disney developed the first three princesses—Snow White, Cinderella, and Aurora—during a time when women were confined to the stereotype of homemaker, with only 39 percent of American women working by the end of the Pre-Transition period (Bureau of Labor Statistics). These gender roles are visibly affirmed through the actions of each princess and show a period of Disney's compliance with what was expected of a predominantly male centered society.

Pre-Transition	Transition	Progression
Snow White and the Seven Dwarfs (1937)	*The Little Mermaid (1989)*	*Brave (2012)*
Cinderella (1950)	*Beauty and the Beast (1991)*	*Frozen (2013)*
Sleeping Beauty (1959)	*Aladdin (1992)*	
	Pocahontas (1995)	
	Mulan (1998)	
	The Princess and the Frog (2009)	
	Tangled (2010)	

In *Snow White and the Seven Dwarfs*, Snow White is portrayed as a naïve princess who depends on her seven male friends and a prince for survival. What could have been the story of a young girl's personal discovery turns into the portrait of women's domesticity: Snow White cleans the home of seven men, accepts a gift from a stranger without the permission of her male friends, and requires true love's kiss from her Prince Charming in order to survive. *Cinderella* and *Sleeping Beauty* have equally disheartening plots—both require the heroism of the male prince other than the potential heroine—and contribute to the gender stereotypes of the time period rather than progressing the women's movement toward equality.

As Time Went On

The Transition period of the Disney princesses represents the aftereffects of the second wave of feminism—defined by Krolokke as the late 1960s to the early 1970s—and reveals a new step toward progression in the definition of gender roles in the United States (7). In the second wave, the primary concerns were "documenting sexism in private as well as public life and delivering a criticism of gendered patterns of socialization" (Krolokke 11). These patterns, which are most evident in the period's first three movies, center around a female protagonist experiencing the need to be free of societal bonds. In the end, however, her happily-ever-after depends on her return to the role expected of women, be it docile princess or subservient wife.

The first movie of the Transition period, *The Little Mermaid*, centers around Ariel, a sixteen-year-old mermaid princess, who is curious about the world outside her kingdom in the ocean. Ariel's inquisitive nature, desire for adventure, and bravery represent Disney's progression of the independent-woman gender role, but the movie ultimately falls back on to the princess-needs-prince plot so familiar during the first wave of feminism. Three years after Disney's first attempt at progression, the 1991 *Beauty and the Beast* falls short for the same reason: the prince is the hero, not the female lead. While Belle escapes the norm as a woman who enjoys reading, speaking her mind, and acting bravely to save her father, she is reduced to a dependent character when she should have been the heroine.

The same problem lies in *Aladdin*, *The Princess and the Frog*, and *Tangled*, all of which center around the female lead trying to break out of her gender role and follow her own path rather than the one defined for her. In *Aladdin*, Jasmine rebels against the traditional role of a woman in Agrabah. She wishes to marry the man she loves and to avoid an arranged marriage, but without the help of Aladdin and Genie, her assertion of opinion would have lasted only until her marriage, when she would have been limited to the whims of her husband. *The Princess and the Frog*, set in New Orleans in 1912, centers around Tiana, Disney's first African-American princess, who dreams of opening her own restaurant. Her role as a strong, determined woman is a credit to Disney's interpretation of the modern woman. However, her plans and title also depend

on her marriage to Prince Naveen, not the strength of her character.

The last movie in the Transition, *Tangled*, tells the story of Rapunzel, an effervescent teen who doesn't want to be imprisoned in her tower—arguably a hint at breaking through the gender barrier—and longs to go on an adventure to see the lights of Corona. While her intent is admirable, she relies on Flynn Ryder to lead her in the right direction. The ending, however, is where this movie differs from the previous seven; Rapunzel makes the heroic sacrifice to save Flynn, but the male hero controls the outcome. When Flynn cuts off Rapunzel's magic-infused hair to save her from a life of slavery to Mother Gothel, he makes the ultimate sacrifice, knowing that without it, he would die. In the end, Rapunzel saves her hero with the magic of her tears, and viewers are left thinking that her crying is her act of true love, and it pales in comparison to Flynn's, who seems like the ultimate hero rather than Rapunzel.

At Long Last

Even though the third wave of feminism began in the mid 90s, Disney did not truly break the princess pattern until *Brave*, which was released in June of 2012. Debuting two years after *Tangled*, *Brave* offers a new version of the female protagonist and breaks the pattern of a princesses' fairytales depending on a man for a happily ever after. Merida, Princess of Clan Dunbroch, is a wily, independent girl who refuses to be confined by the bonds of marriage or have her fate be determined by someone else in an athletic competition. Most notably, she is remembered for saying, "I am Merida. Firstborn descendant of Clan Dunbroch, and I'll be shooting for my own hand" (*Brave*). While other Disney princesses rebel against their own stereotypes, Merida takes action in fourteenth-century Scotland, a time and place where women were known to be strong-willed and—as the movie's title suggests—brave. In her story, Merida's journey to right a wrong she commits against her clan sends her on a personal discovery to learn what is important in her life, and she ultimately realizes that sacrifices have to be made in the name of family. Merida's heroism is why *Brave* signifies a turning point for Disney. No longer is the studio accepting or reinforcing societal norms; instead, by labeling Merida as a true hero and not a dependent female counterpart, it is endorsing change through the power of suggestion.

Frozen, the most recent Disney Princess movie, shatters all previous of gender role limitations by incorporating two strong female leads, Princess Anna and Queen Elsa. Following the adventures of Anna as she selflessly goes off in search of her sister, *Frozen* centers around the idea of family. Even though Anna travels with three male companions—Kristoff, Olaf, and Sven—she does not depend on them and chooses in her last moment of life to protect her sister from Hans rather than kiss Kristoff and save herself. In the end, Anna's act of true love saves her rather than her love for a male lead, making her the enlightened hero that Disney has been progressing toward for nearly 80 years.

Playtime with Disney

One reason Disney is so successful at influencing gender roles is its ability to sell products that coincide with its movies. According to Forbes' 2011 list of best-selling character merchandise, the Disney Princess line ranked number one, making $1.6 billion (Goudreau). In their 1974 *The Psychology of Sex Differences,* Eleanor Emmons Jacoby and Carol Nagy Jacklin introduced the term "self-socialization." Their survey of available evidence led them to suggest that parental modeling plays a "minor role in the development of sex-typed behavior" in children (300). Instead, children's self-directed imitation has an important function in sex role conceptions, which may be "cartoon-like—oversimplified, exaggerated, and stereotyped" (364). This suggestion that "children's choices of whom to imitate plays a key role in their gender development" and opens up room for interesting applications when it comes to Disney (Zosuls et al. 827). Disney simultaneously encourages the purchase of Disney-themed products to further the shelf life of the brand while producing a story that can be imitated through play, which have a major impact on the younger generations.

One reason Disney is so successful at influencing gender roles is its ability to sell products that coincide with its movies

According to Christine Macintyre's *Enhancing Learning through Play: A Developmental Perspective for Early Years Settings*, children experience sociodramatic play between the ages of three and four years old, meaning that they "enact all the roles they see around them and demonstrate detailed understanding of their perceptions of mummy, daddy...and even characters in their favourite stories" (24). When children reach age five, they transition from acting to empathizing with their characters, meaning that when they emulate their favorite prince or princess, they pretend to embody their characteristics (Macintyre 25). Karen E. Wohlwend, a Literacy, Culture, and Language Education professor at Indiana University, states, "During play with Disney Princess toys, children reenact film scripts and expectations for each princess character, quoting memorized dialogue or singing songs from the films as they talk in-character while playing with dolls or while using princess accessories" (58). This means that children take social cues from what they see on screen, so playing with figurines after a movie has created a concept reinforces these ideas through repetition.

Take for example a child given both Cinderella and Anna dolls. For hypothetical purposes, let's say both dolls come with the outfits worn in the movie. Cinderella would have worn the rags while working for Lady Tremaine, her evil stepmother, and the ball gown from when she meets her prince. Anna

would be adorned in her rosemale coronation gown and her sturdier travel outfit. A little girl or boy playing with both these characters would imitate each differently due to what he or she knows about the character from the movie. If the playing children follow the ideas depicted in the animated films, they would portray the Cinderella doll as a damsel in need of a savior or a dance partner, depending on the outfit chosen, but the Anna doll could be used as both a figure of beauty and action. She could be the heroine of her own story, and a second doll would almost be unnecessary for the playtime to be successful. Stephanie Merry, a writer for *The Washington Post*, represents the majority opinion on why Princess Anna is seen as the modern princess:

> Anna is much more of a contemporary rom-com heroine [...]. She's clumsy, awkward and a bit of a dork (although she does a mean robot). But, refreshingly, she's no damsel in distress, not even during the film's late scenes, when she finds herself in a desperate situation.

Princess Anna is just one example of how, over time, Disney movies have progressed to reflect more modern ideals. Women are now seen as in control of their destiny and rarely define themselves as in need of a partner for survival. Now, when children play, they are mimicking these roles and are embodying these lessons through imaginative interactions.

Happily Ever After

From early on, the Walt Disney Company has been capturing the essence of American ideals and the ever-patriotic idea of following one's dreams. Children grow up with Disney movies and learn life lessons through acting, playing, and memorizing themes that range from staying true to your heart to staying true to your family. It is in these values that young children can discover their true role models, and it is up to the Disney writers to instill positive, progressive concepts to keep children from reverting back to more traditional gender roles.

Because of its work with *Brave* and *Frozen*, Disney has shifted into the Progression period, which is an opportunity to shatter the glass ceiling and push past traditional gender roles for women. By abandoning the princess-needs-prince pattern, Disney is moving beyond one of the formulas that made its company worth over $159.04 billion—as of October 2014—to change the stereotype of the modern heroine ("Walt Disney Enterprise Value").

The modern Disney princess is independent, brave, and heroic, and contemporary audiences need to see strong female leads who can stand alongside their male counterparts. By doing so, Disney encourages the idea of equality between genders and helps build a universal acceptance of the concept of defining oneself not by how one is born, but by his or her own actions.

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Beyond Interpretation: The Need for English-Spanish Bilingual Psychotherapists in Counseling Centers

Stephanie Rose Guilman

Despite the cultural and linguistic diversity that exists in the United States of America, bilingualism and multiculturalism have been neglected, if not almost completely ignored, in the field of psychotherapy. When counselors and clients are unable to commuanicate due to language barriers and cultural disconnect, the client often leaves the counseling session feeling unsatisfied and is more likely to discontinue therapy altogether. This article focuses on Spanish-speaking clients seeking mental health services in the United States, surveying the available literature to argue that that clients who receive therapy in their native language are better able to express themselves and form closer relationships with their clinicians. Because bilingual counseling leads to more effective treatment for clients and improved counseling strategies for clinicians, psychotherapy in the United States should actively recruit new English-Spanish bilingual psychotherapists and invest in professional development training in Spanish language and culture.

In 2004, Burck noted that bilingualism and multiculturalism have been neglected, if not almost completely ignored, in psychotherapy. Research over the past decade has further demonstrated the importance of English-Spanish bilingual psychotherapy (Eamranond, Davis, Phillips, & Wee, 2009; Ivers, Ivers, & Duffey, 2013; Santiago-Rivera, Altarriba, Poll, Gonzalez-Miller, & Cragun, 2009), Collectively, these studies indicate a need for counselors to receive better training in order to provide culturally competent psychotherapy to their Spanish-speaking clients, even for clients who are multilingual, because "the Spanish language expresses their heritage, is a source of identity and pride, and is the means through which emotions are articulated" (Santiago-Rivera & Altarriba, 2002, p. 30).

As of July 2013, the United States' Hispanic population was 54 million—17 percent of the total population—making "people of Hispanic origin the nation's largest ethnic or racial minority" (United States Census Bureau, 2014). Improving access to mental health services for Spanish-speaking clients is extremely important because Latinos in the United States are at risk for poverty, low educational attainment, substance abuse, poor health, and exposure to violence (Furman et al., 2010). To serve this growing population, it is increasingly important that English-Spanish bilingual psychotherapists, such as Licensed Professional Counselors or Licensed Clinical Social Workers, have a presence in counseling centers.

Latino clients with limited English receive lower quality mental health services than clients who speak English

Beyond Interpretation

Eamranond et al. (2009) noted that "language plays an important role in the quality of mental health services provided to Spanish-speaking Latino patients" (p. 494). According to Eamranond et al. (2009), clients have problems understanding and communicating with clinicians who do not speak their native language, also referred to as language-discordant clinicians. Furthermore, the quality of the therapy and the relationship between client and clinician is negatively affected by the clinician's limited understanding of the Spanish language and Latino culture. In short, Latino clients with limited English receive lower quality mental health services than clients who speak English proficiently. When these individuals cannot receive the mental health services they want or need, it creates a dangerous problem, as they may stop seeking mental health services altogether.

There has been a growing demand for interpreters in counseling sessions that provide mental health services to Spanish-speaking individuals. In 2014, the United States Bureau of Labor Statistics projected that overall employment of interpreters will grow almost 50 percent from 2012 to 2022. Although the use of interpreters increases access to mental health care for the Latino population, clients with language-discordant clinicians may still be less satisfied with their sessions and less likely to return for follow-up counseling sessions, regardless of whether the clinician employed an interpreter (Eamranond et al., 2009).

One key reason why using an interpreter in counseling sessions may not yield satisfaction for Spanish-speaking clients is a lack of personal connection between the client and clinician. Although professional interpreters provide quality renderings of communication from one spoken language to another, interpreting services may not be appropriate in counseling sessions. The nature of the counseling environment is closely tied with personal emotions and feelings, which the client may prefer to disclose only to the therapist. Eamranond et al.'s study (2009) demonstrated that Spanish-speaking clients are more likely to disclose personal information and develop stronger relationships with Spanish-speaking therapists than with non-Spanish-speaking therapists. In other words, although interpreting services can help overcome the language barrier, they do not necessarily provide the quality mental health services that Spanish-speaking individuals seek.

Improving the Client-Clinician Relationship

Guttfreund (1990) found that native Spanish-speakers who received counseling in Spanish were able to express their emotions and sentiments more authentically than native Spanish-speakers who received counseling in English. Ivers et al. (2013) noted that "learning another person's language demonstrates competence, respect, and interest" (p. 230), which can lead to "empowerment of non-English-speaking clients" (p. 227) and improved client-clinician relations. Use of a client's native language in counseling can help the client to feel increased levels of comfort and a greater sense of meaning in the counseling environment. In addition, language-concordant therapists can understand cultural nuances that might go unnoticed by a therapist who only speaks English (Bloom, Masland, Keeler, Wallace, & Showden, 2005). Conversely, if an English-speaking therapist conducts a therapy session with a Spanish-speaking client, it may result in disorganized or withdrawn discussions and generally unsuccessful counseling. In this scenario, misinterpretations can lead to incorrect conclusions and harmful diagnoses.

According to Espín (2013), therapy is completely relational and language is a crucial part of all human relationships. Espín (2013) suggested that native English-speaking therapists and native Spanish-speaking clients may be able to communicate effectively through the following method: the therapist should be familiar with the Spanish language and competent in the Latino culture, and the client should also have a basic knowledge of English. The therapist could then allow the client to fully express his or her emotions and feelings in Spanish while simply observing body language and emotional expression. The client will then rephrase what he or she said in English so

that the therapist can understand more comprehensively what is happening in the client's life. The use of English and Spanish by both the counselor and the client is just one example of how to enable native Spanish-speaking clients to express themselves in their native language during therapy. If therapists are not learning Spanish and becoming competent in Latino culture, many Spanish-speaking individuals will experience difficulty finding these satisfying, effective counseling services. In this scenario, individuals can suffer from the various consequences of limited mental health care, such as hopeless submission to psychological or behavioral disorders, which can become more debilitating the longer they go without proper mental health attention.

Benefits for Clinicians

Ivers et al. (2013) summarized a number of studies, noting that individuals who are bilingual and individuals who are working to acquire a second language demonstrate increased problem-solving skills, flexibility in thinking, and better executive functioning (p. 222). They added that "the process of learning a second language necessarily exposes individuals to diverse cultural worldviews that may enhance their cognitive development as well as accelerate their multicultural and relational competence" (p. 230), which is a worthy benefit for both clinician and client. These benefits can improve the therapist's effectiveness in solving problems and developing new perspectives.

There is a positive correlation between highly creative individuals and exposure to cultural diversity (Simonton, 1997). This finding is significant for the counseling field because psychotherapists have to utilize their own creativity to analyze their clients while providing helpful yet inspiring services. In a recent study, Tadmor, Galinsky, and Maddux (2012) indicated that individuals who positively identify with different cultures possess a greater degree of integrative complexity: the ability and willingness to accept different perspectives and to create connections among different perspectives. Integrative complexity is an important ability for counselors who wish to connect with clients from different cultures and learn how to accept their perspectives in order to better provide them with true understanding and quality advice.

Furthermore, according to Diamond (2010), bilingual individuals can benefit from executive function (stored in the prefrontal cortex region of the brain), which provides them with a strong working memory, reasoning skills, and problem solving tactics. Similarly, multilingual individuals experience greater thought flexibility and interactional abilities compared to those who are monolingual (Burck, 2004). These cognitive abilities can help clinicians work in new ways, absorb new perspectives, and process the large amount of stimuli they encounter when interacting with clients from different cultures.

Benefits for Clients

For the Spanish-speaking client, having a language-concordant clinician is associated with overall better well-being and functioning (Eamranond et al., 2009). At a basic level, language has important effects on the development of identity. Research has shown there are significant differences in how people describe themselves and how they recall events, simply depending on the language they speak (Burck, 2004). Spanish-speaking individuals often experience life differently through their native language than native English-speaking individuals do. Wierzbicka (1994) added that the feeling or emotion a person reports in different languages, through apparently equivalent words, often does not convey the exact same meaning because they carry a different cultural context. In the counseling profession, it is crucial to understand that "attitude towards feelings, emotions, and… verbal and nonverbal expression [can] vary across culture" (Wierzbicka, p. 202). It is important that psychotherapists understand these phenomena and strive to better understand their Spanish-speaking clients.

Spanish-speaking individuals often experience life differently through their native language

Espín (2013) drew on the work of psychologist Lev Vygotsky, who "believed that speech became internalized and served as an aid to self-regulation of internal states. For Vygotsky, speech creates thought" (p. 201). According to Espín (2013), this close relationship between speech and thought may explain why even native Spanish-speaking individuals who also speak English will seek out therapy in Spanish. Being able to use their native language to express themselves allows these clients to experience therapy in a more profound and meaningful way. When these individuals can speak passionately in their first language, it can serve as a powerful emotional release. The Spanish-speaking client in the session will have a more profound therapy experience and feel highly accepted, well-understood, and comfortable with sharing his or her emotions, which are critical for the client's success in therapy.

Implications for the Counseling Field

The counseling field is quickly growing internationally (Hohenshil, 2010). When counselors in the United States become language-concordant to serve non-English-speaking populations, they showcase a feasible solution to mental health disparities that many other countries can consider implementing. No matter where counselors work around the world, it is imperative that they strive to be culturally sensitive and consider the sociocultural context when evaluating clients who speak a native language different than their own.

Counselor educators may consider "increasing their focus on recruiting future bilingual counseling students" (Ivers et al., 2013, p. 231) and can provide training opportunities to learn how to effectively counsel Spanish-speaking clients (Ivers et

al., 2013). English-speaking mental health counselors should actively seek out continuing education programs, such as PESI seminars, where they can can learn key Spanish vocabulary, how to conduct assessments and develop treatment plans in Spanish, and how to use empathy and establish lasting relationships by using words and phrases in Spanish (PESI, 2014). Alternatively, according to Brown and Hewstone (2005), counselors can better serve the growing Latino population through immersion and interaction with the Latino and/or Spanish cultures. Cultural immersion promotes multicultural counseling development by expanding self-awareness, improving multicultural skills, and broadening multicultural understanding (DeRicco & Sciarra, 2005).

In 2005, Dingfelder estimated that only 1 percent of all mental health professionals in the United States identified as Latino. Psychotherapists do not need to identify as Latino to help the growing minority population. The ability and willingness to speak Spanish along with general knowledge of Latino culture can help the therapist connect and communicate with the client, which can improve the quality of psychotherapy and help decrease what Dingfelder (2005) estimated as a 50 percent dropout rate among native Spanish-speaking clients. Mental health psychotherapists who wish to help diminish the quality gap for English-to-Spanish mental health services can volunteer and/or work closely in local Latino communities to become more knowledgeable about the Spanish language and to better embrace Latino culture.

Although some states require county-operated mental health agencies to provide information and services to clients in their primary language, these requirements can have limitations. According to the California Department of Health Care Services (2014), California implements this requirement only when the number of Spanish-speaking individuals exceeds 3,000 per county. Native Spanish-speakers must then worry whether residing in a particular county means they can or cannot receive proper mental health care. One strategy to bridge this mental health disparity is a greater effort to recruit more English-Spanish bilingual psychotherapists nationwide, especially in cities and urban areas where there are very large Latino populations, while encouraging English-speaking therapists to attend cultural or Spanish competency training. Matching native Spanish-speaking clients with language-concordant psychotherapists can ultimately result in greater frequency of contact, increased length of treatment, and improved outcomes (Bloom et al., 2005).

Conclusion

English-Spanish bilingual psychotherapists within counseling centers are increasingly necessary across the United States, especially in cities or urban areas where there are large Latino populations. Matching native Spanish-speaking clients with language-concordant psychotherapists not only helps the client feel more understood and experience a greater level of comfort in the session, but also helps the therapist consider new perspectives and understand the client on a more profound and personal level. These mutual benefits will ultimately strengthen the client-clinician relationship and improve the quality of therapy for both the clinician and client.

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About the Contributors

Hayley Norian ('14)

Hayley Norian, from Oradell, New Jersey, is a May 2014 graduate with a BS in Biology. Hayley participated in the Honors Program while at JMU, completing her honors thesis with Dr. Steven G. Cresawn during the Spring 2014 semester. She was also a Recruitment Chair for the JMU chapter of Beta Beta Beta, the National Biological Honor Society, and a member of Phi Beta Kappa. Hayley is applying to medical school and plans to pursue a career in Emergency Medicine.

Robert Sharp ('14)

Robert Sharp, from Wodonga, Australia, is a History major with a minor in Classical Studies. He is a proud member of the James Madison University chapter of Sigma Alpha Lambda, and upon graduation he plans on exploring many of the opportunities that life has to offer. Sharp spends his free time reading books, watching movies, and bonding with his beloved cats.

Juliana Garabedian ('15)

Juliana Garabedian, from West Chester, Pennsylvania, is a senior WRTC major with a minor in Creative Writing. After attending graduate school, she plans to pursue a career in publishing or corporate communication. In addition to her interest in professional writing, she enjoys writing fiction novels and short non-fiction essays and was recently published as a finalist in *Cosmopolitan's* 2014 fiction contest.

Stephanie Rose Guilman ('14)

Stephanie Rose Guilman, from Blacksburg, Virgina, graduated from James Madison University with a major in Psychology and two minors in Latin American & Caribbean Studies and Spanish/English Translation & Interpretation. Stephanie is currently working as a Research Associate for a market research firm based in Washington, D.C. In her spare time, Stephanie enjoys reading and researching about mindfulness meditation and compassionate living.

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